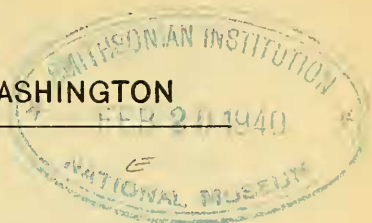


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON



A NEW *HYPOPACHUS* FROM GUATEMALA.

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In a recent paper¹ I have described a new *Gymnophthalmus* from the Salamá desert basin of Baja Verapaz, Guatemala. A further examination of the collection which I brought together from that region during the summer of 1938 has revealed a new *Hypopachus*. To the memory of the great English naturalist, C. C. Champion, who made the first biological explorations in this desert basin, I dedicate

Hypopachus championi, new species.

Holotype.—An adult male, Museum of Zoology, University of Michigan, No. 85533, collected in a temporary pool on the desert flats about one kilometer south of San Gerónimo, Baja Verapaz, Guatemala, on the evening of July 6, 1938. Collector, L. C. Stuart.

Diagnosis.—A *Hypopachus* of the *cuneus-variolosus* series with a compressed, outer, metatarsal tubercle, and distinguished from *variolosus*, its closest relative, by the more extensive webbing on its feet and its much paler undersurface.

Description of holotype.—Snout rounded, acute in lateral view, slightly longer than the diameter of the eye. Canthus rounded, loreal region oblique and slightly concave. Interorbital space almost twice as broad as the upper eyelid. Fingers free, comparative lengths II-I-III-IV, subarticular tubercles prominent and conical, three palmar tubercles at base of hand. Toes not dilated, web between third and fourth extending almost to second tubercle on fourth toe. Toes slightly more than one-half webbed, second fully webbed on outer side. Comparative toe lengths IV-III-V-II-I. Subarticulate tubercles well developed and conical, two metatarsal tubercles, the outer compressed and obliquely transverse. The heels overlap when the legs are adpressed. Skin smooth above with many small spinules; smooth beneath with a leathery texture. A transverse fold between the eyes extends around and behind the eye and obliquely posterior to the arm insertions.

In spirits the ground color of the dorsum is pale brown and that of the

¹L. C. Stuart, "A Description of a New *Gymnophthalmus* from Guatemala, With Notes on Other Members of the Genus," *Occ. Papers Mus. Zool. Univ. Mich.*, 409 (1939): 1-10, Pl. I.

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head purplish brown. Superimposed on the dorsal ground color is a large irregular blotch of the same color as and contiguous with the color of the surface of the head. This blotch is narrow on the nape, widens at mid-body and constricts again above the anus, leaving the dorsal ground color visible on either side of the nape and along the sides. From the tip of the snout extending posteriorly to the anus is a very narrow light line. The sides of the head become progressively lighter ventrally, leaving the lips a dirty white. An irregular light streak extends from the eye posteriorly and ventrally to the arm insertions. A trace of a narrow dark line is visible on the side of the head from the snout, through the eye and posteriorly onto the shoulder where it enlarges to become an irregular dark blotch. The upper surfaces of the arms and legs are brown mottled with darker, and the latter spotted with black. A large black blotch is visible dorsally at the leg insertions. The entire upper surfaces are covered with tiny spicules which have a white apex. Ventrally the sides become progressively lighter and fade into the dirty cream color of the belly, which shows faint reticulations posteriorly becoming more intense on the undersides of the legs. The chin is gray. A narrow, faint, light line extends partially along the posterior surface of each thigh from the anus. The palms and feet are gray, with unpigmented tubercles.

From my field notes, I quote the following:

“Dorsal ground color varying from brownish gray to reddish brown. The center of the back with a dark-edged darker blotch. Median stripe gray to bright yellow. Dorso-laterally evidences of dark irregular band, most pronounced between eye and arm insertions where it appears as upper border of dark blotch which is irregular and above arms. Small granules of dorsum with white points, giving appearance of white punctations. Upper surfaces of arms and legs as dorsum with irregular mottlings of black. Dark irregular blotch in front of leg insertions. Sides gradually lightening to grayish color of ventrum which may be faintly reticulated or spotted with darker or immaculate; same for undersurfaces of arms and legs. Fine light line from anus down legs to heel.”

Range.—Though known only from the type locality, it is possible that this species occupied the arid portions of the Rio Motague Valley and the desert basins of central Guatemala.

Paratypes.—Museum of Zoology, University of Michigan, No. 84079 (42), collected with the holotype, and Nos. 84080 (23), 84081 (41), 84082 (36) taken July 8, 1938, at the type locality.

Variation.—The large paratypic series shows that considerable variation exists in this species. The general body proportions are more or less constant, but the interorbital width may vary 1.5–2.0 times the width of the upper eyelid, and the heels may overlap or fail to meet when the legs are adpressed. The webbing on the toes also shows considerable variation, and the web between the third and fourth toes may be as little as in *variolosus* or greater than in the holotype, but its average extent is slightly less than to the second subarticular tubercle. In other morphological features, such as snout length, phalange length, the extensively webbed second toe and the prominence of the subarticular tubercles, variation is negligible.

Although variation in coloration is extensive, the pattern is always essen-

tially as that described above. The only significant pattern variant is to be found in the intensity of the ventral coloration. Although the majority of specimens show a faint gray reticulum posteriorly, this occasionally is replaced by small black punctations. The ventrum of this species, however, is never so dark as that of *H. variolosus*.

In the large series at hand only a single female is to be found. This single individual suggests that the females are essentially like the males in all respects except in the extent of webbing on the feet. The web between the third and fourth toes in this female extends only to the first tubercle on the fourth toe, and the webs between the other toes are similarly greatly reduced.

Relationships.—There appear to exist in Central America two distinct groups of *Hypopachus*. The *inguinalis* group in which the outer metatarsal tubercle is rounded, contains, in addition to *H. inguinalis* Cope, the recently described *H. globosus* and *H. barberi* of Schmidt.² This group is restricted to what is referred to geologically as "nuclear Central America." Schmidt suggests that yet another species of this group may exist in Alta Verapaz, for his specimens, collected at the type locality of *H. inguinalis*, Cobán, are decidedly smaller than measurements given by Parker.³ This seems improbable, as I have collected other specimens in the Cobán region which are larger than Schmidt's specimens and check well with Parker's measurements. The *cuneus* group, with a compressed outer metatarsal tubercle, is made up of *H. cuneus* Cope, *H. oxyrhinus* Boulenger, *H. variolosus* (Cope), and the form described above. The group ranges from the United States southward into Panama. Though the interrelations of this group are at present in an unsettled state, it is evident that, on the basis of the extensive webbing on the toes, *H. championi* resembles most closely *H. variolosus*.

Habits.—Nothing is known of the habits of this species beyond the fact that it appears to breed comparatively late in the season. Though the rains "break" during May in the Salamá basin, this form apparently does not emerge until well into July. During the evenings of July 6 and 8, 1938, following brief but heavy showers, the specimens were found in great numbers wherever water accumulated on the desert flats. At that time breeding had not commenced, for the females were just beginning to become active. The paratype series contains but a single female. That the males were in breeding condition was evidenced by the fact that many males were found clasping. The call of the species, a low, harsh quack, is similar to that of *H. cuneus*, which I collected in the Petén. Associated with *championi*, either within or beside the same pools, were *Hyla baudinii* Duméril and Bibron and *Hyla staufferi* Cope.

Acknowledgments.—For financial aid which enabled me to make the collections mentioned above, I am indebted to the Horace H. Rackham School of Graduate Studies, University of Michigan, and for assistance in studying this species of *Hypopachus*, I wish to thank my colleague, Mrs. Helen T. Gaige.

²Karl P. Schmidt, "New Central American Frogs of the Genus *Hypopachus*," *Zool. Ser. Field Mus. Nat. Hist.*, 24, 1, 1939: 1-5, Fig. 1.

³H. W. Parker, "A Monograph of the Frogs of the Family Microhylidae," British Museum (Natural History). London, 1934: 112.